

**GOVERNMENT OF INDIA
SCIENCE AND TECHNOLOGY
LOK SABHA**

UNSTARRED QUESTION NO:561
ANSWERED ON:24.11.2006
SPECIAL PACKAGE TO NORTH- EAST
Rijiju Shri Kiren

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) the focused areas identified by the Government to use Science and Technology in the development of the country;
- (b) whether the Government has provided special package to North East for the development of Science and Technology; and
- (c) if so, the details thereof, State-wise?

Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES (KAPIL SIBAL)

(a) The focused areas identified by the Government to use Science & Technology in the development of the country include Science & Technology Communication and Popularization, Science and Technology Entrepreneurship Development, Natural Resource & Data Management Systems Development, Science and Society Programme, special component plan for the development of Scheduled Castes and Tribal sub plan, etc. The areas include drinking water, energy, low cost housing, sanitation, drugs and pharmaceuticals, bio-technology meteorological services; etc.

(b) Yes, Sir. During discussions between Ministry of Science and Technology & State Governments of Arunachal Pradesh & Nagaland, areas of S&T intervention have been drawn up for Strengthening Science Education; Bio-Resource Technologies; Energy; Meteorology; Mapping; Health Care; Bamboo processing and Disaster Management.

(c) The details are attached at Annexures - I & II.

Annexure - I

Arunachal Pradesh

(I) STRENGTHENING SCIENCE EDUCATION:

DST will take up a programme for upgradation of science laboratories in selected colleges/ Arunachal University, and re-training of science teachers.

DSIR will provide to colleges/ institutions in Arunachal Pradesh free of cost and on a continuing basis 22 journals published by CSIR institutions. DBT will establish at the Arunachal Pradesh University Itanagar (or at another suitable location), a Bioinformatics Infrastructure Facility (BIF) for the promotion of biology teaching.

DST will organise a course in basic science to be conducted for 20 school children of Arunachal Pradesh (of Class X/ XI at the JC Bose sub-centre at Darjeeling in the summer vacations of 2007.

DBT will organise through the National Bioresource Development Board (NBDB) a 1 month long vacation training programme in bio-resources to be conducted at Arunachal Pradesh University, Itanagar.

DBT will provide to selected college libraries and scientific institutions

a comprehensive atlas 'Bio-diversity mapping of the NE region.
DST will provide in the calendar year 2007, 20 telescopes to each State in the North East (40 to Assam).
Vigyan Prasar will provide publications and information material to 100 schools in Arunachal Pradesh.

(II) BIO-RESOURCE TECHNOLOGIES; TECHNOLOGY TRANSFER, CULTIVATION AND PROCESSING:

DBT has taken up a programme for mapping of bio-diversity and conservation (ex-situ).

DST/ DBT will take up a special & large scale project for characterisation & conservation (ex situ) of bio-diversity, coordinated by a national institution, working with local agencies/ institutions in Arunachal Pradesh.

DBT will establish a programme for capacity building and training of local scientists/ researchers and selected institutions of Arunachal Pradesh. Revamping of the orchid research centre at Tipi (East Kameng district), conversion of the facility to a bio-resource centre and establishment of a sub-facility at Ziro, DST/ JC Bose Institute, Kolkata.
Temperate zone aromatics - research, promotion, cultivation and value addition, DST has sanctioned a project for large scale cultivation of lavender (with technical support and mother plant material from IHBT Palampur) in the Dirang area, to be implemented through grower cooperatives, with value addition in the form of distillation of valuable lavender oil, and tie-up with industry for marketing.
DST, in collaboration with IHBT Palampur, will investigate the possibility of a) further cultivation and product conversion of other high value crops for oil (geranium, rose clarysage, rosemary) in temperate areas, including specifically in the Lumla area of Tawang, including through the Sadbhavna programme of the Indian Army) and b) support a programme of stevia cultivation (100 hectares) and product conversion in the Siang valley in Arunachal Pradesh.

Establishment of cultivation/ value addition in geranium in the Subansiri (Ziro) area - plant material, establishment of local nuclei nurseries, packages of practices, cultivation, product conversion, DST/ DBT will carry out an expert review and assessment in consultation with the State Government in November 2006.

DST will support, through the Arunachal Pradesh S & T Council, 2 projects in 2 separate areas of the State, for documentation of traditional medicinal practices based on indigenous herbs and plants.
DST will support through IHBT Palampur, a special programme for the induction of poly-houses/ green houses for intensive cultivation in the Tawang area through the local community in conjunction with the Sadbhavna programme of the Indian Army (190 Mtn Brigade).

(III) ENERGY AND TRANSPORTATION

DST will support the establishment of 50 micro/ mini-hydel (< 100 Kw) projects in (25 each in 2007 and in 2008) for remote villages in Arunachal Pradesh.

DST will support the establishment of an entrepreneurially run fabrication unit for microhydels.

(IV) METEOROLOGY

DES/ IMD will investigate the possibility of setting up of a Doppler weather radar at or near Pasighat.
IMD will establish 13 Automatic Weather Stations in different districts of Arunachal Pradesh by December 2006.
IMD will install 20 telemetry stations in the North East to monitor seismic activity. Four stations will be established in Arunachal Pradesh, by June 2007.

(V) MAPPING

DST will extend the neighbourhood mapping programme to Arunachal Pradesh, based on the development of a proposal by the Government of Arunachal Pradesh.

DST/ NATMO will provide district level planning maps to the Government of Arunachal Pradesh.

Survey of India will provide 5,000 print atlases and 150 CD atlases for use in Middle/ High schools in the State.
Survey of India will take carry out mapping of select urban agglomerations in the State.

(VI) HEALTH CARE:

DST will support the provision of two mobile diagnostic facilities in Arunachal Pradesh, on the DST/ TIFAC model implemented in Uttaranchal.
DST has approved a programme of induction of 350 nano-membrane filters for rural areas to provide clean drinking water.
DST will provide 25 nano-membrane filters additionally to the Indian Army

(190 Mtn Brigade) for use of troops deployed in forward locations.
DST will support the setting up of 15 Iron Removal plants for clean drinking water in 2007 based on technology developed by the Central Glass & Ceramics Research Institute (CGCRI), Kolkata.
DST will support the trial induction of 20 non-powered nano-membrane water filters (with attachment for iron removal) in rural areas in Arunachal Pradesh.

DST will support the establishment of a tele-medicine facility at one location in the East Siang district.

(VII) BAMBOO SECTOR

(a) Support to State - policy

State Government will establish a counterpart agency for the bamboo sector, with a multi-disciplinary core team.
DST/ NMBA will carry out a study of the access and regulatory regime for bamboo (including felling and transportation) in Arunachal Pradesh, and of the fiscal and incentive regime for value added products.
DST/ NMBA will support an actionable study to be carried out by an agency for the Government of Arunachal Pradesh, with the objective of

establishing a road map for the development of the bamboo sector in Arunachal Pradesh.

(b) Gasification of bamboo for electricity:

DST/ NMBA has approved the establishment of a 25 Kwe fabricated gasifier with producer gas engine at Namsai, Lohit district.

DST/ NMBA has approved the establishment of a 25 Kwe (35 kg/ hour) gasifier to provide electricity for a residential educational establishment (Central Institute of Himalayan Culture Studies, Dahung) in Arunachal Pradesh.

DST/ NMBA will support, for off-grid and remote villages, a programme of induction of 6 bamboo gasifiers in 2007 (in the 25 Kwe - 75 Kwe range), to provide electricity to villages, or to institutions (residential schools, health sub-centres, small enterprises).

(c) Manufacture of bamboo composites:

A formerly closed plywood unit has been converted to the manufacture of bamboo composites, with technology support from NMBA, and new processes. A second unit is being taken up, also in Lohit district. Expansion and modernization of existing bamboo ply unit.

DST/ NMBA is prepared to support 2 more entrepreneurial units in Arunachal Pradesh in 2007 for manufacture of bamboo composite material/ revival of closed plywood units based on conversion to bamboo, and the establishment of linked feeder units for primary processing of bamboo.

(d) Bamboo processing

Cluster based bamboo flattening unit for supply to manufacturers of bamboo composites established by a first generation entrepreneur, with NMBA support at Lathaw, in Lohit district.

Mat making unit being established at Namsai, Lohit district with NMBA support.

DST/NMBA will support the establishment in 2007 of a Bamboo Technology Park, in East Siang district, at Pasighat. DST/ NMBA will support the establishment of an entrepreneurially managed bamboo processing facility at Jairampur.

DST/ NMBA will provide training in the use of commercial and indigenous natural dyes on bamboo and bamboo products to craftspersons of Arunachal Pradesh, at one location in the State in December 2006 through a training and demonstrative workshop conducted by the IIT Delhi (Department of Textile Engineering) to develop value added products. Industrial pallets have been developed in Arunachal Pradesh using bamboo engineered material (shuttering plywood grade) to substitute the use of timber pallets by the tea industry (ICD Amingaon).

(e) Structural - whole bamboo/ bamboo composite material:

Demonstrative pre-fabricated modular structures in high altitude areas established at forward locations of the Indian Army completed in August 2006 in Tawang area.

A project taken up to develop a cluster of 20 houses in village Niglok

under Ruksin block, and with cost-sharing through local MLA LADS funds, to demonstrate structural applications for housing in rural areas. Rehabilitation of a 50 bedded Child Hospital at Pasighat, Arunachal of size 5000 sq. ft. taken up using bamboo engineered materials - roofing and cladding.

Supporting GOI's Sarva Shiksha Abhiyaan (SSA), in Lohit district, 16 schools are being built by the NMBA in the form of pre-fabricated structures using bamboo engineered material. DST would encourage utilisation in Government housing and constructional programmes of bamboo based engineered material. DST/ NMBA will support the field induction of 20 (H/A + pre-fabricated) structures .

(f) Propagation and cultivation of bamboo:

One fully equipped Vegetative Propagation Centre has been established at Namsai in Lohit district.

DST/ NMBA is prepared to support the establishment of a bamboo plant hardening facility, and at least 2 more Vegetative Propagation Centres to prepare good quality bamboo plant material with NMBA support, to make available bamboo plant material for plantation/ homestead cultivation. DST is prepared to provide 35,000 hardened tissue cultured plants of Bambusa balcooa to support bamboo plantation programmes of the Government of Arunachal Pradesh, including a) block plantation by communities, and b) homestead cultivation in areas where bamboo processing activities have been taken up.

(g) Bamboo shoots processing

Cluster level training workshop and demonstration for cluster level bamboo shoot processing held in Lohit district (Namsai) in June 2006. DST/ NMBA is prepared to support the establishment by entrepreneurs of a unit for industrial scale bamboo shoot processing, with capabilities of processing other horticultural produce as well.

(h) Community enterprise: bamboo charcoal

DST/ NMBA is prepared to induct 3 batteries (5 kilns each) of bamboo charcoal kilns in the Subansiri area.

Annexure - II

Nagaland

(VIII) STRENGTHENING SCIENCE EDUCATION:

1 DST will take up a programme for upgradation of science laboratories in selected colleges and re-training of science teachers.

DSIR will provide to colleges in Nagaland free of cost and on a continuing

basis 22 CSIR publications

DBT will establish at the Nagaland University, Kohima, a Bioinformatics Infrastructure Facility (BIF) for the promotion of biology teaching. DST will organise a course in basic science to be conducted for 20 school children of Nagaland (school children of Class X/ XI) at the JC Bose sub-centre at Darjeeling in the summer vacations of 2007.

DBT will organise a 1 one-month long vacation training programme (30 students) in bio-resources to be conducted at Nagaland University, Kohima. DBT will provide to selected college libraries and scientific institutions a comprehensive atlas 'Bio-diversity mapping of the NE region.

DST will provide in the calendar year 2007, 20 telescopes to each State in the North East (40 to Assam).

Vigyan Prasar will provide information packages of Vigyan Prasar publications and information material to 100 schools each in Nagaland.

(IX) BIO-RESOURCE TECHNOLOGIES; TECHNOLOGY TRANSFER, CULTIVATION AND PROCESSING:

DBT has sanctioned a project - 'Mapping and quantitative assessment of distribution & population status of plant resources of Eastern Himalayan region', involving 9 institutions in the NE States.

Upgradation of the existing tissue culture facility at Dimapur to a bio-resource facility.

Ex-situ conservation of indigenous resources and establishment of gene bank, DST.

DST will provide assistance to the Government of Nagaland for a project on 'Documentation of traditional medicinal practices based on indigenous herbs and plants'.

State government, DBT will establish a programme for capacity building and training of local scientists/ researchers and selected institutions of Nagaland.

(X) ENERGY

DST will support the establishment of 50 micro/ mini-hydel (< 100 Kw) projects in (25 each in 2007 and in 2008) for remote villages in Nagaland. DST will support the establishment of an entrepreneurially run fabrication unit for turbines for mini/ micro hydel projects in the North East, at a location in the North East, and for fabrication of pico (< 10 kwe) hydel generator sets at Dimapur.

(XI) METEOROLOGY

DES/ IMD will establish 8 Automatic Weather Stations in Nagaland by IMD by December 2006.

DES/ IMD will install 20 telemetry stations in the North East to monitor seismic activity. Two stations will be established in Nagaland, at Mokokchung and Kohima by June 2007.

DES/ IMD will investigate the possibility of siting of a Doppler weather radar (DWR) in Nagaland.

(XII) MAPPING

DST has approved the extension of the neighbourhood mapping programme to Nagaland.

Survey of India will provide 5,000 print atlases and 150 CD atlases for use in Middle/ High schools/ institutions in the State.
Survey of India will take carry out mapping of select urban agglomerations in the State.

DST will convert the Natural Resource Data Management Centre at Kohima to a Spatial Data Infrastructure Centre, support establishment of district spatial data units, and provide linkages to the National Spatial Data Institute, Delhi

(XIII) HEALTH CARE:

DST will support the provision of one mobile diagnostic facility in Nagaland, on the DST/ TIFAC model implemented in Uttaranchal.
DST will support the setting up 33 Iron Removal plants for clean drinking water in 2007 based on technology developed by the Central Glass & Ceramics Research Institute (CGCRI), Kolkata.

DST has taken up a programme of induction of 150 nano-membrane filters for rural areas to provide clean drinking water in Nagaland.

DST will support the trial induction of 20 non-powered nano-membrane water filters (with attachment for iron removal) in rural areas in Nagaland.
DBT will establish a Genetic Counseling Unit (GCU) in Nagaland.

DST will support the establishment of a tele-medicine facility at one location in the State.

(XIV) BAMBOO SECTOR

Government of Nagaland has established the Nagaland Bamboo Development Agency (NBDA) which is developing as a strong and active counterpart agency. DST/ NMBA will encourage and support a review of the access and regulatory regime for bamboo (including felling & transportation), and of the fiscal and incentive regime for value added products.

(a) Gasification of bamboo for electricity:

One 100 Kwe electrical gasifier based on bamboo has been fabricated & completed for bamboo processing facility at Dimapur.

25Kwe gasifier (35 kg/ hour) bamboo gasifier with a suitably rated producer gas engine being taken up at Government of Nagaland R & D Farm at Razhephema village, for lighting, pumping of water for irrigation and for poultry farm).

DST/ NMBA is prepared to support, for off-grid and remote villages, a programme of induction of six bamboo gasifiers in 2007 (in the 25 Kwe - 75 Kwe range), to provide electricity to villages, or to institutions (residential schools, health sub-centres, small enterprises).

(b) Integrated bamboo processing & treatment facilities

Integrated bamboo processing & treatment facility being established at Dimapur.

DST/ NMBA is prepared to support the establishment, on the same collaborative and cost sharing arrangements, a fully equipped bamboo processing facility at Tuli in collaboration with Government of Nagaland, for operation under entrepreneurial arrangements. DST/ NMBA has approved the setting up of a Shuttering Board Manufacturing Unit in Dimapur.

DST/ NMBA is prepared to support a further 2 entrepreneurial units in Nagaland for manufacture of bamboo composite material/ revival of closed plywood units based on conversion to bamboo, and the establishment of linked feeder units for primary processing of bamboo.

(c) Structurals - whole bamboo/ bamboo composite material:

DST would encourage utilisation in Government housing and constructional programmes of bamboo based engineered material. DST/ NMBA will support, on a cost-sharing basis and upto 50,000 sq. ft, the induction of bamboo pre-fabricated structures for public domain buildings, especially for the school construction programme, and for hospitals and dispensaries (linked with the Sarva Shiksha Abhiyaan, or other GOI funded programmes).

(d) Bamboo shoots processing (industrial scale):

DST/ NMBA is prepared to support the establishment by entrepreneurs of an additional unit for industrial scale bamboo shoot processing, with capabilities of processing passion fruit, pineapples and other horticultural produce as well.

(e) Bamboo based hygiene products:

NMBA has approved the establishment of a pilot production facility for bamboo based hygiene products and wound dressings, at Dimapur, with technical support from Shri Ram Institute of Industrial Research, Delhi.

(f) Bamboo shoots processing (community/ cluster level):
Community level processing low cost equipment (> Rs. 28,000) and simple technology packages, producing up to 100 Kg of processed shoot on a daily basis.

(g) Bamboo processing and product conversion (community level):
Mat supply chain development activities with the Nagaland Bamboo Development Agency in February 2006 in the Tuli area of Nagaland. DST/ NMBA is prepared to support the expansion of mat weaving activities to other clusters in the State, for supply to industrial scale manufacturing units, and to support the induction of mechanised mat weaving equipment with sliver lines, to increase productivity and out-turn.

(h) Community enterprise: Bamboo charcoal
Optimised system for low cost kiln based charcoal production, with briquetting option developed has been successfully inducted in Nagaland by NMBA.

NMBA has supported the establishment of a further 45 kilns in villages across Nagaland by NBDA with NMBA cost-sharing support (50%). The programme will be completed by December 2006.

(i) Training on commercial natural dyes - usage and application on bamboo
Training carried out by IIT Delhi (Department of Textile Engineering at Dimapur (October 2005).

(j) Propagation and cultivation of bamboo:

For the first time, 5,000 plants of *Phyllostachys pubescens* (Chinese Moso monopodial bamboo) from IHBT Palampur sent to Nagaland Bamboo Development Agency for field trials in Nagaland.

Multi-locational trials of tissue cultured bamboo are being carried out at Wokha, with Tissue cultured *Bambusa balcooa* prepared at Hosur and hardened at HPC Jagi Road with NMBA support under a DBT coordinated programme. DST/ NMBA is prepared to support the establishment of a bamboo plant hardening facility, and at least 2 Vegetative Propagation Centres to prepare good quality bamboo plant material with NMBA support, to make available bamboo plant material for plantation/ homestead cultivation. DST is prepared to provide 35,000 hardened tissue cultured plants of *Bambusa balcooa* to support bamboo plantation programmes of the Government of Arunachal Pradesh, including a) block plantation by communities, and b) homestead cultivation in areas where bamboo processing activities have been taken up.

(k) Flowering bamboo: *Melaconna baccifera*

1. Survey of India has carried out mapping of incidence of *Melaconna baccifera* in the State. 3 plot sheets (1:100,000) handed over to Nagaland (Wokha, Zunhebphoto and Mokokchung districts) for verification and updating.

(XV) DISASTER MANAGEMENT

2. DST is prepared to support the Government of Nagaland DST for a programme of capacity building for early prediction and management of natural disasters such as flash floods, earthquakes and other areas of interest to the State Government.